

## **Logging Oil Sands Cores: A Refined Approach Using Dipmeter Data**

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Dipmeter logs have been obtained from a majority of holes drilled through the McMurray Formation and their utility for geological interpretation and modelling has been demonstrated in several case studies over the last two decades. However, the dipmeter's application in industry commonly remains neglected, with only the very basic capabilities of this powerful tool being utilized.

On selected cores from both surface mineable and InSitu development areas, we demonstrate how the dipmeter log may assist in describing reservoir architecture and associated facies assemblages. The method includes the classical approach of describing sedimentary structures and lithology, coupled by their correlation with tad pole plot patterns over the examined interval. A comparison of our approach with commonly used schemes in industry demonstrates its advantages, including:

- Recognizing misleading sedimentary processes (identified in traditional core descriptions) that result from variable slab orientation through bedforms (such as IHS).
- Properly identifying erosional surfaces (i.e. channel base erosional surfaces vs. point bar re-activation surfaces).
- Determining the vertical continuity of depositional units
- Recognizing 3D facies distribution for the purposes of predicting and understanding the frequently observed rapid changes in lithology between closely spaced wells.

Including extensive dipmeter analysis to the mapping and delineation of a majority of Athabasca development projects should increase the resolution on facies reconstructions, supplementing current approaches.